$C_{max}=C_{min}+0.3+(\%Cr-12)\times0.06$, balance iron including incidental impurities, the powder being formed by rapid atomisation followed by an annealing treatment such that the powder contains at least 12% of chromium in solution and a dispersion of carbides.

3. An alloy powder according to claim **2** having a stable substantially fully ferritic matrix.

4. An article produced from an alloy powder according to claim **1**, formed by a powder metallurgy process comprising forming a shape from the powder by compaction followed by sintering without the application of external pressure.

5. The article of claim **4**, wherein said alloy powder is mixed with a conventional stainless steel powder.

6. An article produced from an alloy powder according to claim **2**, formed by a powder metallurgy process comprising forming a shape from the powder by compaction followed by sintering without the application of external pressure.

7. The article of claim **6**, wherein said alloy powder is mixed with a conventional stainless steel powder.

8. A method of producing articles by a powder metallurgy process comprising forming a shape by compaction of a powder followed by sintering without the application of external pressure or deformation, in which the powder is a stainless steel alloy powder which has been produced by rapid atomisation followed by an annealing treatment, the alloy powder comprising, in weight percent, chromium 14 to 30, molybdenum 1 to 5, vanadium 0 to 5, tungsten 0 to 6, silicon 0 to 1.5, carbon according to the formula set forth below, a strong carbide forming element 0 to 5, wherein the total of Mo, V and W being at least 3, the balance being iron including incidental impurities, the alloy powder together with any addition of free graphite powder mixed therewith having a minimum and maximum carbon content according to $C_{min}=(\%V\times0.24)+(2\times\%Mo+\%W)\times0.03+(\%Nb\times0.13)+(\%Ti\times0.25)+(\%Ta\times0.066)$, and

$C_{max}=C_{min}+0.3+(\%Cr-12)\times0.06$, such that the powder has a sufficient carbon content to form carbides with all the Mo, V, W and other strong carbide forming elements present while leaving at least 12% chromium in solution in the matrix.

9. A method according to claim **8**, further comprising the steps of sintering the article in the range 1050° C. to 1350° C. for a period of 10 minutes to three hours, and cooling the article at a rate in the range 10° C. to 200° C. per minute.

10. A method according to claim **8**, further comprising the step of mixing the alloy powder with an additional free graphite powder.

11. A method according to claim **8**, in which the annealing treatment comprises annealing under vacuum for 12 to 100 hours at a temperature in the range 700° C. to 1050° C.

12. An article produced by the method of claim **8**, comprising an article consisting of a distribution of carbides embedded in a substantially ferritic matrix containing at least 12% by weight of chromium in solution, said article being free of the necessity for further heat treatment.

13. Articles according to claim **12**, in which the alloy powder comprises, in weight percent, chromium 20 to 28, molybdenum 2 to 3, vanadium 1.5 to 2.5, tungsten 2.5 to 3.5, silicon 08 to 1.5, carbon 0.555 to 2, a strong carbide forming element 0 to 5, and balance iron including incidental impurities.

14. An alloy powder comprising, in weight percent, chromium 14 to 30, molybdenum 1 to 5, vanadium 0 to 5, tungsten 0 to 6, silicon 0 to 1.5, carbon C_{min} to C_{max}, a strong carbide forming element 0 to 5, and a balance iron including incidental impurities,

wherein $C_{min}=(\%V\times0.24)+(2\times\%Mo+\%W)\times0.03+(\%Nb\times0.13)+(\%Ti\times0.25)+(\%Ta\times0.066)$ and $C_{max}=C_{min}+0.3+(\%Cr-12)\times0.06$, such that the powder includes sufficient carbon to form carbides with all the Mo, V, W and strong carbide forming element present in the powder.

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